ABSOLUTE NEUTRON YIELDS FROM SEVERAL LIGHT ELEMENTS BOMBARDED WITH 10 MEV DEUTERONS

BY

LYLE WILLARD SMITH

B. S., University of Illinois, 1942

M. S., University of Illinois, 1943

AN ABSTRACT OF A THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN PHYSICS
IN THE GRADUATE COLLEGE OF THE
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The total neutron yield from thick targets of Beryllium, Carbon, Boron and Deuterium bombarded with 10 Mev deuterons has been measured by comparison of the activity induced in a large tank of $MnSO_4$ solution surrounding the source with the activity induced by a standard Ra-Be source.

The final results are given in the following table:

Target	YIELD IN		
	Grams Ra-Be Equivalent per Microampere	Neutrons per Second per Microampere	Deuterons per Neutron
D_2	$2{,}230 \pm 240$	$3.1 \pm 0.6 \times 10^{10}$	200 ± 36
Be	$2{,}620 \pm 25$	$3.7 \pm 0.3 \times 10^{10}$	168 ± 16
B	$1{,}550 \pm 50$	$2.17 \pm 0.25 \times 10^{10}$	280 ± 30
C	990 ± 25	$0.67 \pm 0.14 \times 10^{10}$	930 ± 200

VITA

Lyle Willard Smith was born in Normal, Illinois, on February 20, 1920. After the usual secondary school education he attended Illinois Wesleyan University at Bloomington, Illinois, Illinois State Normal University in Normal, and the University of Illinois. He received his B. S. in Physics from the latter institution in 1942. He then entered the University of Illinois Graduate School and received his M. S. in Physics in 1943. During 1944-45 he was employed at the Munitions Development Laboratory at the University of Illinois. During 1943 and 1946 he was employed as a teaching assistant at the University of Illinois and in 1947 as a research assistant. Since September, 1947, he has served as research associate in Physics.

The author has published the following works:

Lyle W. Smith and P. Gerald Kruger, Multiple Scattering of Electrons in the Gas of a Wilson Cloud Chamber, Phys. Rev., **72,** 357 (1947).

P. Gerald Kruger and Lyle W. Smith, Cloud-Chamber Search for a Low Mass Neutral Particle, Phys. Rev., **72,** 360 (1947).